



IEEE CINCINNATI SECTION NEWSLETTER - JAN. 2009

JANUARY MEETING **The Science of Global Warming**

DATE: Thursday, January 22, 2009
PLACE : Raffel's – 10160 Reading Road (see below for directions)
TIME : 5:30 p.m. to 6:00 p.m. - Social Time
6:00 p.m. to 7:00 p.m. - Dinner
7:00 p.m. to 8:30 p.m. - Presentation

COST FOR DINNER: \$10.00 per person – REGARDLESS OF MEMBERSHIP OR MEMBERSHIP GRADE!

NOTE: DINNERS ARE ALWAYS OPTIONAL - YOU MAY ATTEND THE PROGRAM ONLY.

MENU SELECTIONS: Egg Plant Parmesan, Salisbury Steak, Baked Ham with Pineapples, Scalloped Potatoes, Seasoned Green Beans, Tossed Salad, Rolls and Butter, Assorted Pies, Coffee, Tea, Iced Tea, Soft Drinks. There is also a bar available for the purchase of alcoholic drinks.

LOCATION: Raffel's is located at 10160 Reading Road, south of Glendale-Milford Road on the east side of Reading. Take I-75 to the Glendale-Milford Rd. Exit, go east on Glendale-Milford Road approximately $\frac{3}{4}$ of a mile to Reading Rd. and turn right on Reading.

RESERVATIONS: Please email Fred Nadeau for reservations at <mailto:fnadeau1@earthlink.net> (preferred) or call the Section Voice Mail at 513-629-9380 by **Noon, Tuesday, January 20, 2009** if you plan to attend. Please leave your Name, IEEE Member Number, and a daytime telephone number.

PE CREDITS: Depending on the subject matter, attendance at IEEE Cincinnati Section Meetings now qualifies the attendee for Professional Development Hours towards renewal of Professional Engineers Licenses. Required documentation will be available following the meeting! The Section Meetings also provide a great opportunity to network with fellow engineers in the area.

ABOUT THE MEETING: Our speaker this month, Dr. Marwan Nusair, will give a fact based, analytical presentation on the hard science of global warming. He will discuss, based on scientific data, why some scientists think the earth is warming and why other scientists think the earth is actually cooling. Dr. Nusair is a member of the Cincinnati IEEE section and has a keen interest in the way climatology data has been presented to make the case for global warming.

MEMBERSHIP NEWS

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

Daniel Abbott	Nicholas Hunter	Kyle A. Sieftring
Patrick Annan	Johnny Maynard	Daniel Ryan Talpas
Jarret Callahan	Will Middleton	Makio Tamura
James Anthony Charles	Michael James Pierce	Nishanth Vepachedu
Jonathan Ford	Kirthi Radhakrishnan	Timmy R. Williams
John Gideon	Joshua Shank	Thomas Zajdel
Retina M. Hobbs		

We wish to welcome these new members to the Cincinnati Section!!!

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Bob Morrison, Editor

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Irving Langmuir and the Thermionic Vacuum Tube

Eighty years ago this month, the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS (IRE) included a paper by Irving Langmuir on the theory of the thermionic vacuum tube and some of its radio applications. The author, a future IRE president and Nobel Prize recipient, was at the General Electric Research Laboratory (GERL) when his paper was published.

Langmuir was born in 1881 in Brooklyn, NY, and graduated in metallurgical engineering from the Columbia School of Mines in 1903. He went to Germany for graduate work where he earned a Ph.D. in physical chemistry at the University of Gottingen in 1906. He returned to the United States, where he taught for three years at the Stevens Institute of Technology in Hoboken, NJ, and where a heavy teaching load left him with little time for research. In 1909, he joined the research staff at the GERL where he spent the rest of his professional career

Langmuir's initial research at GERL concerned phenomena in electric lamps with tungsten filaments. Beginning in 1913, he investigated thermionic vacuum tubes and made important contributions to both theory and practice including improved vacuum pumps and pressure gauges. He found that even small traces of gases in a thermionic tube produced enormous changes in its performance. In his September 1915 paper, Langmuir explained the effect of space charge in the vicinity of the cathode and included theoretical equations for the current between electrodes as a function of tube geometry and applied voltage. He pointed out that "with the elimination of the gas effects, all the irregularities which had previously been thought inherent in vacuum discharges from hot cathodes were found to disappear." He proposed the use of the term "kenotron" for two-element tubes that did not depend on gas for their operation and the term "pliotron" for vacuum triodes.

As examples of pliotron applications, Langmuir reported that small pliotrons were especially suitable for radio receivers where a cascade arrangement of tuned amplifiers had provided "a wonderfully high degree of selectivity." He stated that a larger version of the pliotron could produce up to a kilowatt of power as an oscillator and that a 500-W radio telephone transmitter using pliotrons had been tested recently. Pliotrons were produced in large numbers by GE for military use during World War I and the availability of a 20-kW pliotron tube with water cooling was announced in 1922. Subsequently, GE produced pliotrons rated at 100 kW which were about 5 ft long and 6 in. in diameter.

Langmuir served as president of the IRE during 1923. During the 1920's he investigated plasma physics and developed an ion sheath theory which proved important in the design of thyratrons and other gaseous electronic tubes. He also contributed to the theory of design of miniature vacuum tubes suitable for use at ultra-high frequencies. Langmuir received the Nobel Prize in chemistry in 1932 in recognition of his work on surface chemistry and surface films. An interest in weather phenomena led him to work on methods of producing smoke screens and deicing aircraft wings during World War II. After the War he engaged in somewhat controversial experiments of cloud seeding as part of an effort to modify hurricanes or to induce rain at periodic intervals over large areas. He enjoyed outdoor activities including mountain climbing, skiing, and skate sailing. Langmuir retired from GE in 1950, but he continued as a consultant until his death in 1957. Twelve volumes of his collected papers were published from 1960 to 1962.

*James E. Brittain
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IEEE NEWS

Winning Entry in 'How Engineers Make a World of Difference' Online Video Scholarship Competition Featured on 'Design Squad' Web Site

WASHINGTON (18 November 2008) -- The winning entry in the 2008 IEEE-USA "How Engineers Make a World of Difference" Online Engineering Video Scholarship Competition can be seen on the PBS "Design Squad" Web site at <http://pbskids.org/designsquad/special/ieee/ieee.html>.

Engineering Undergraduates Ben Toler and Emile Frey of Louisiana Tech University, Ruston, La., split the IEEE-USA competition's \$2,500 first prize. Their entry was deemed most effective in reinforcing for an 11-to-13-year-old audience how engineers improve the quality of life and how engineering can be a creative and rewarding career.

With two teams of high-school students competing to solve a new engineering challenge each week, "Design Squad" was created by PBS to reach the same 11-to-13-year-old audience. The program is in its third season on PBS with the IEEE continuing funding support.

Additionally, IEEE-USA is awarding \$5,000 in scholarship prizes in the second year of its online engineering video competition. Entries must be submitted through YouTube by U.S. undergraduate students in engineering, computer science and information technology no later than 16 January 2009. For more information on how to enter, go to http://www.ieeeusa.org/communications/video_competition.

IEEE-USA Participates in Technology-Enhancement Meeting with Obama Transition Team

WASHINGTON (11 December 2008) -- The United States should deploy universal broadband and increase energy efficiency, among other things, to promote economic growth and spur job creation, two IEEE-USA presidents said in a letter presented to President-Elect Barack Obama's transition team.

IEEE-USA made some of its recommendations in a meeting with four members of Obama's Science, Technology and Innovation Transition Task Force at AeA's Washington headquarters on 5 December. IEEE-USA was one of roughly 50 organizations invited to share ideas on what the new administration could do to stimulate the economy within Obama's first 60 days in office.

"Technology and innovation remain the cornerstone of our nation's economy," 2008 IEEE-USA President Russ Lefevre and 2009 President Gordon Day wrote. "Any plan for creating jobs and economic growth begins with encouraging innovation that promotes those new ideas and products and, ultimately, results in jobs."

IEEE-USA made recommendations in six areas: research & development investments, broadband, health care, energy infrastructure, small business and long-term priorities.

By expanding ubiquitous broadband access into rural areas, more people could compete for technology-based jobs without relocating. Plus, the incentive for high-tech companies to establish operations in these lower-cost areas is enhanced. This helps keep jobs in the United States.

“As with the universal deployment of electricity and telephone service, universal broadband service, coupled with new Internet applications, will generate economic and social gains that far exceed the investment in the enabling infrastructure,” the presidents wrote.

IEEE-USA believes that by investing in such things as Smart Grid technologies, plug-in hybrid electric vehicles and clean, renewable energy sources, U.S. energy efficiency will increase.

“We also need to increase our electricity reliability by upgrading our aging national transmission grid,” presidents Lefevre and Day wrote. “These steps can stimulate economic activity, create jobs and ensure that our country has abundant supplies of reliable and affordable electric power.”

The letter is available at <http://www.ieeeusa.org/policy/policy/2008/120508.pdf>

The IEEE Cincinnati Section Executive Committee **Member Names and Phone Numbers**

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